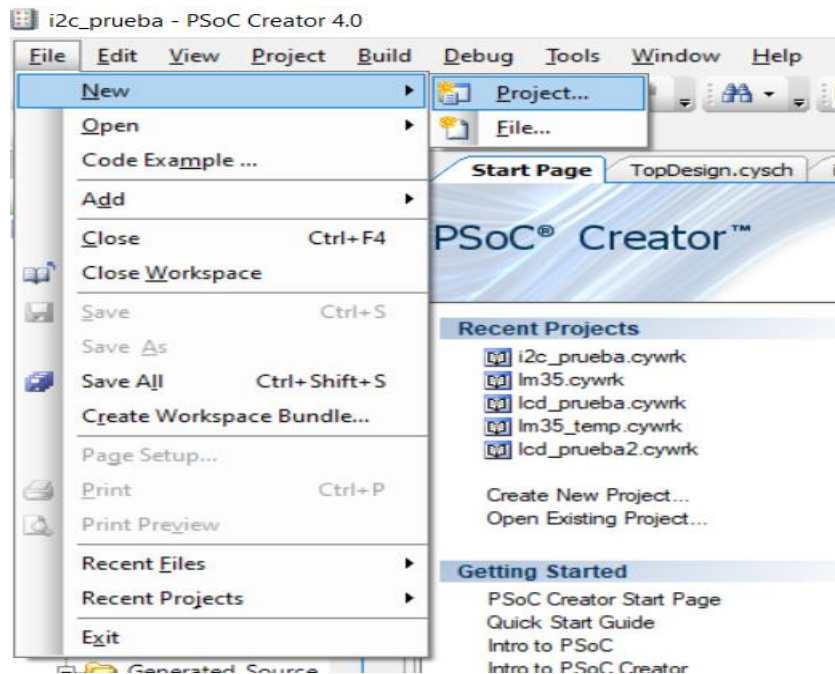
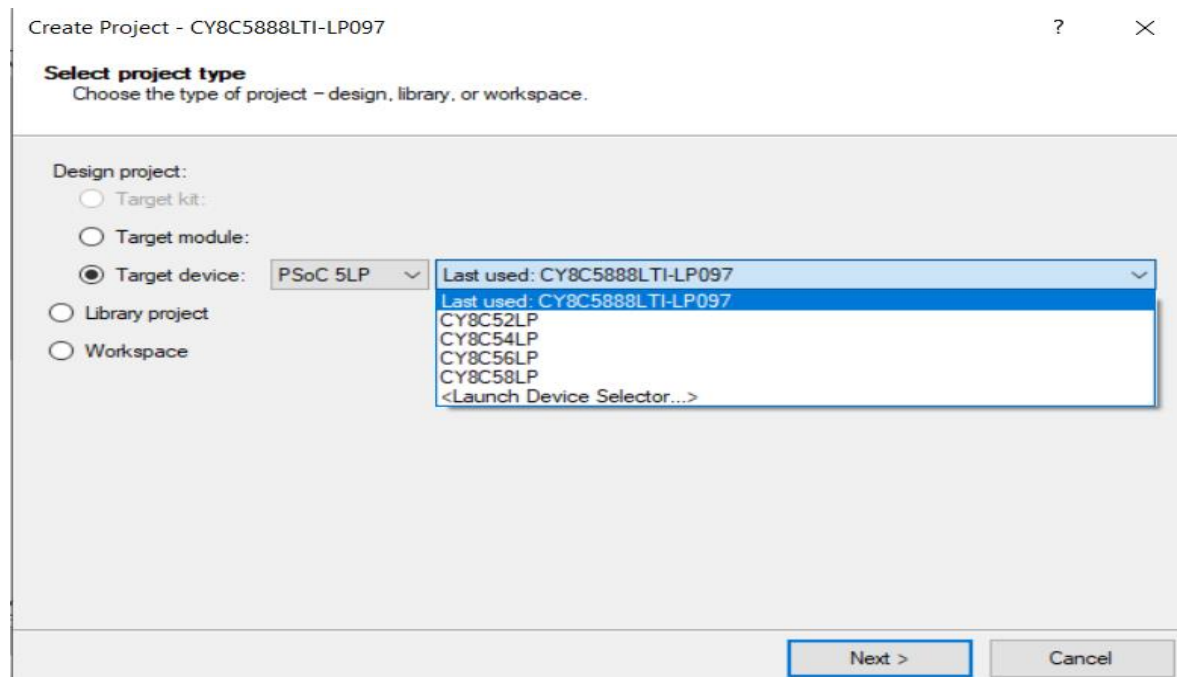


How made the project

1) Open Psoc Creator and klik new project



Mark the target device box and select the mcu



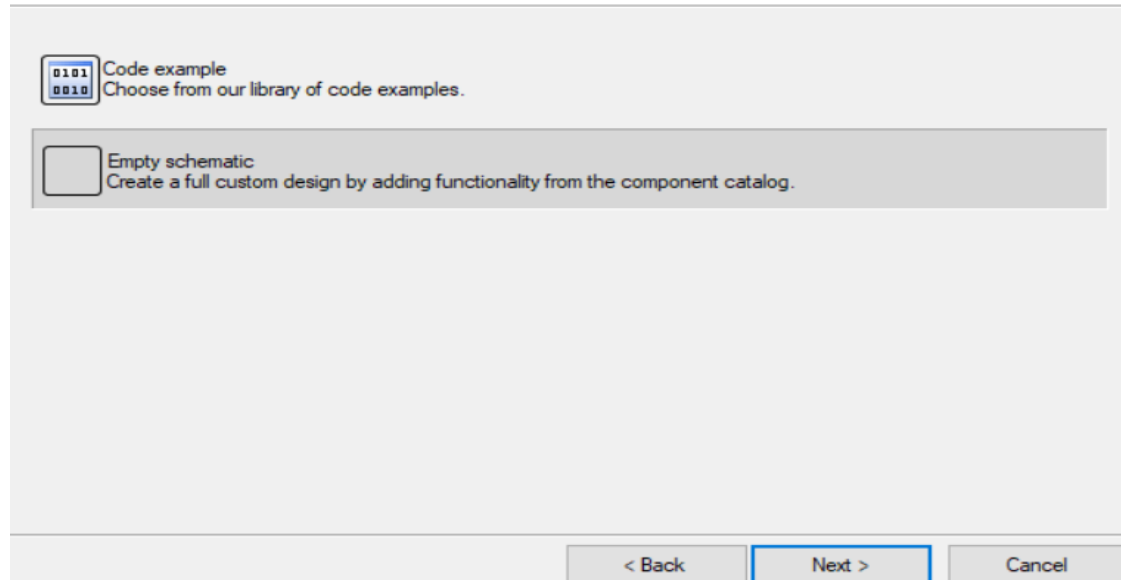
Next and select Empty schematic box

Create Project - CY8C5888LTI-LP097

? ×

Select project template

Choose a schematic template or start your design with a kit or example project.



☒ Code example
Choose from our library of code examples.

☐ Empty schematic
Create a full custom design by adding functionality from the component catalog.

< Back Next > Cancel

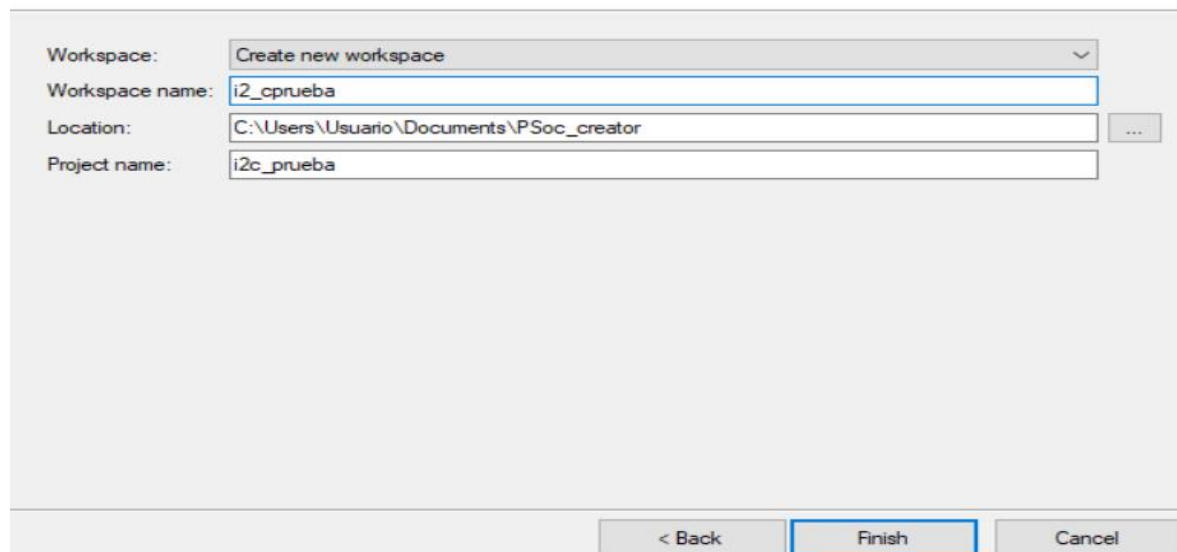
Give a name to your project and create a new workspace if wish you and save it in a new folder afther that finish

Create Project - CY8C5888LTI-LP097

? ×

Create Project

Choose a name and location for your design.



Workspace: Create new workspace

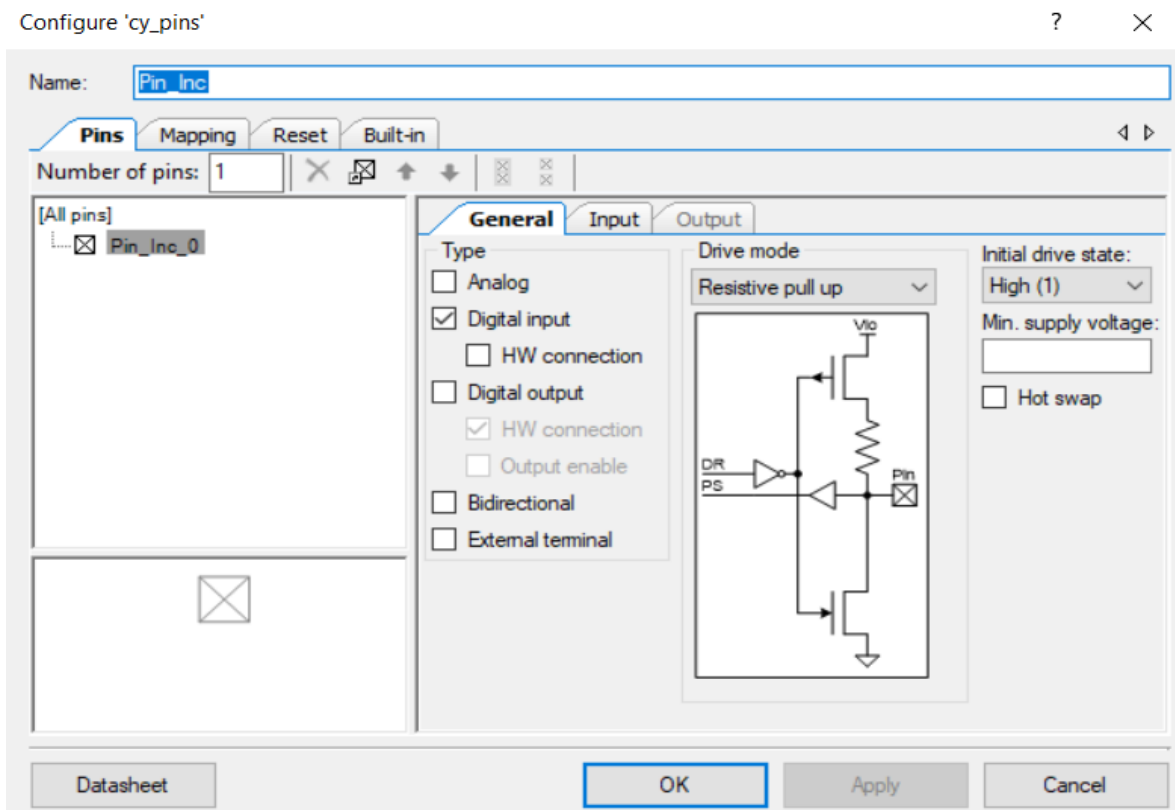
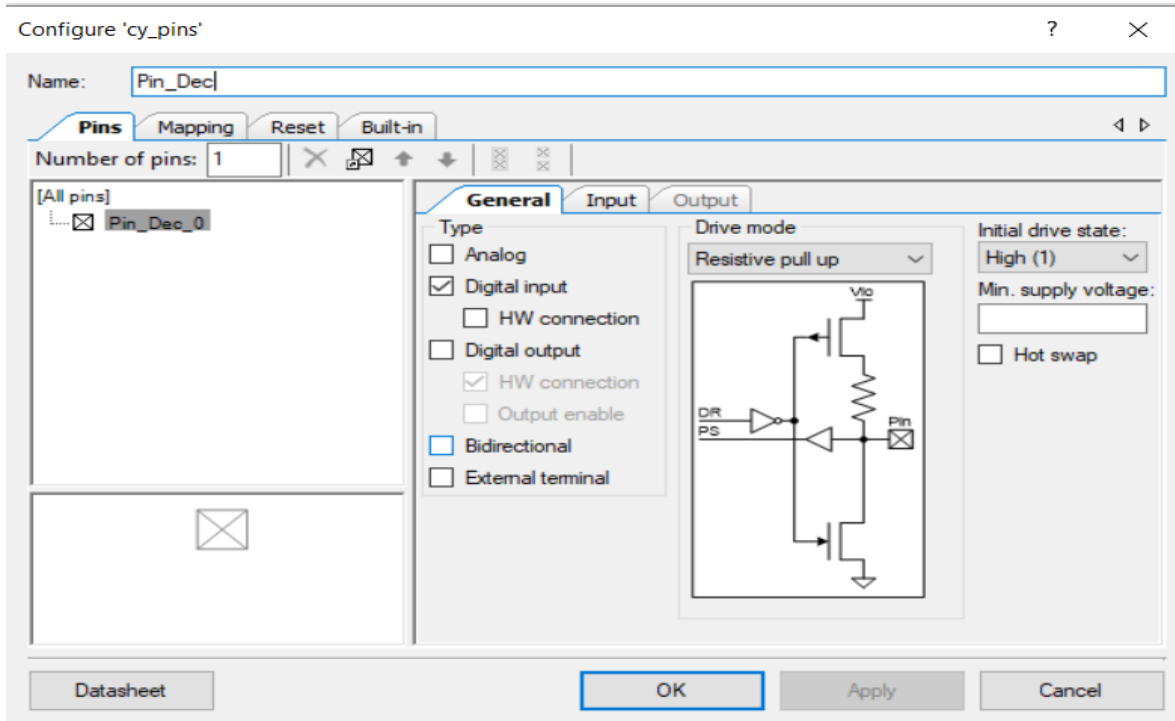
Workspace name: i2_cpueba

Location: C:\Users\Usuario\Documents\PSoc_creator ...

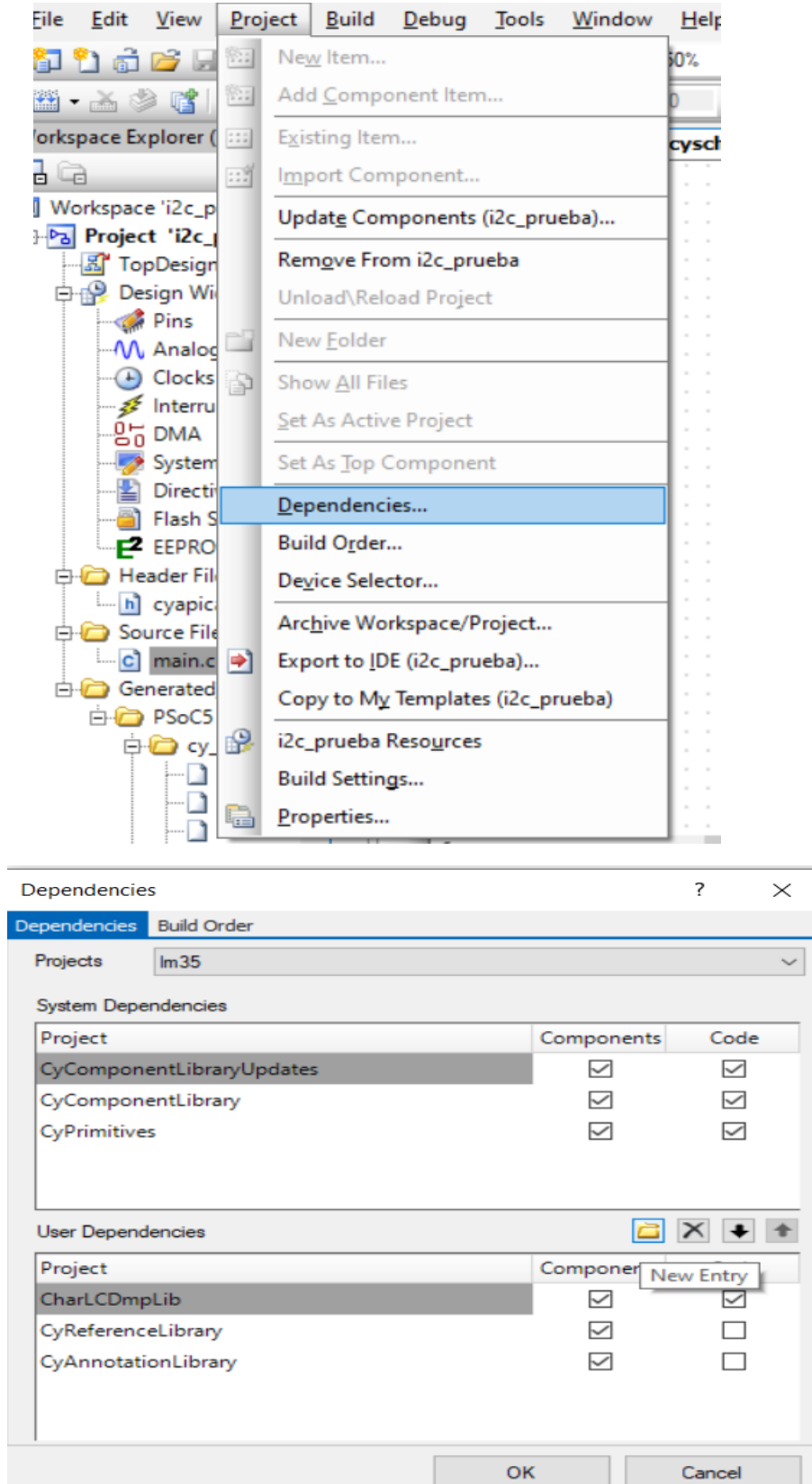
Project name: i2c_prueba










< Back Finish Cancel



2) Configure Pull-up resistor for Pin_Inc(P12_2) and Pin_Dec(P12_3)







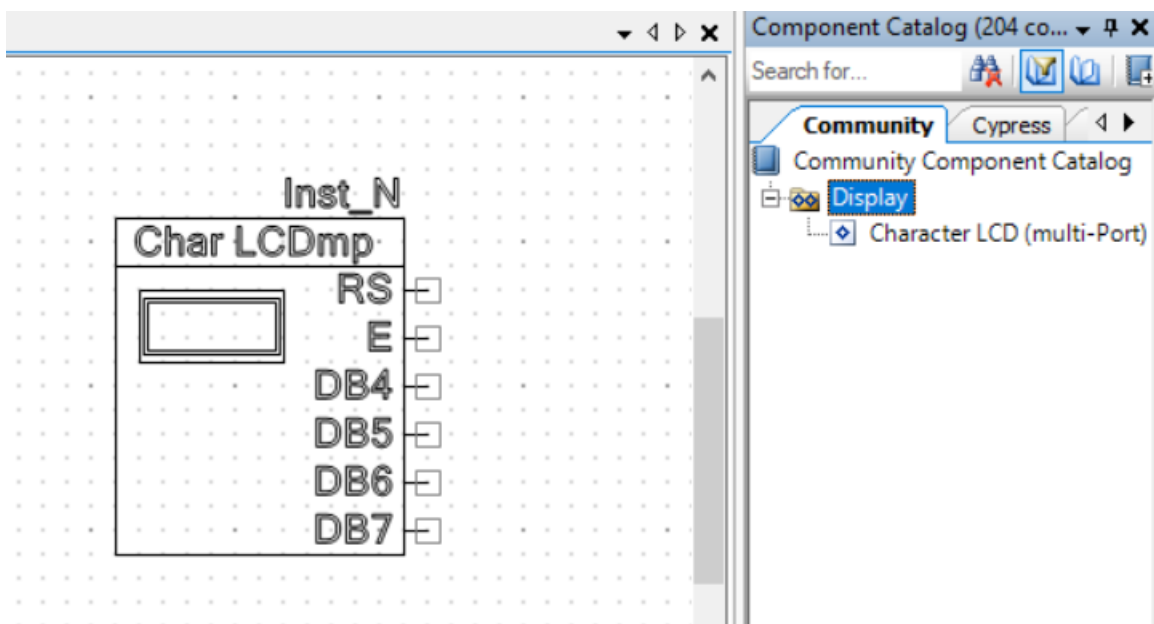
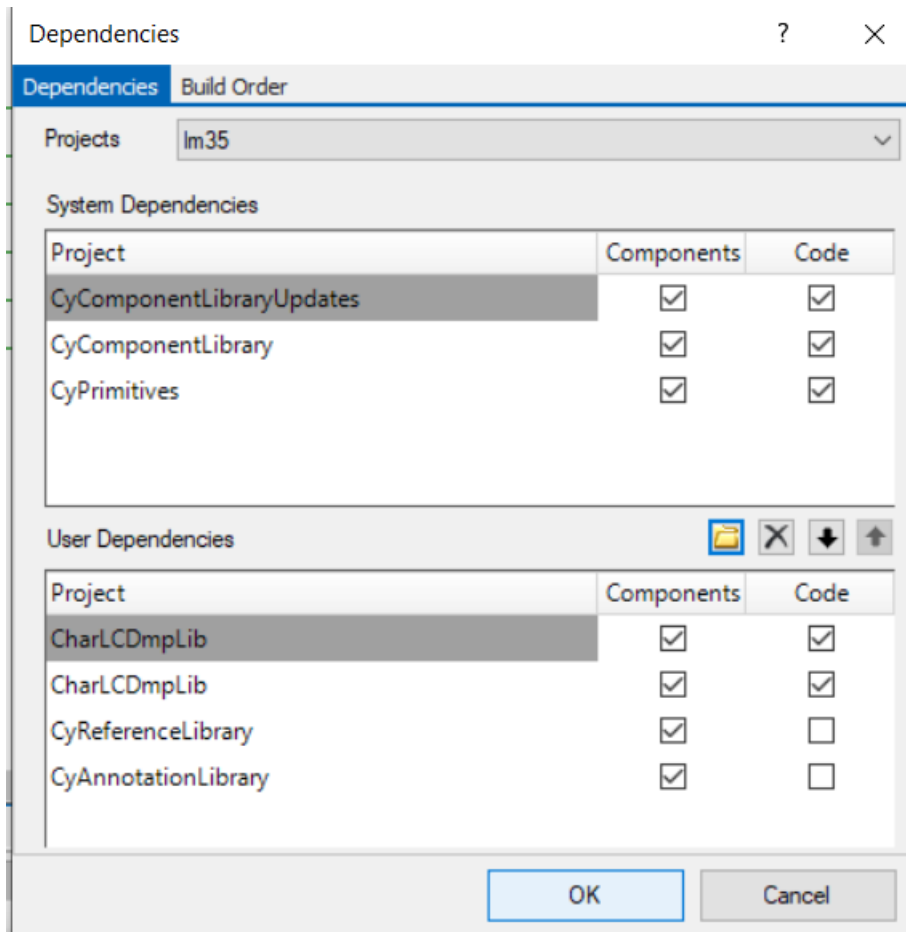
3) Import library for 2x16 lcd



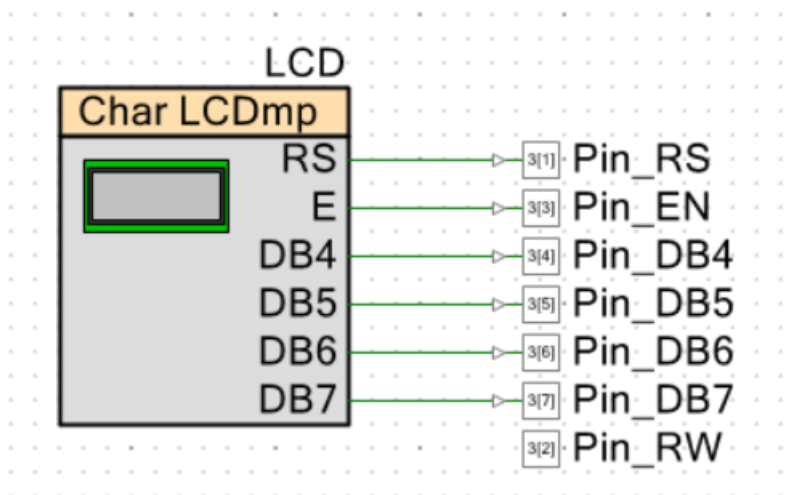
Nombre	Fecha de modificación	Tipo	Tamaño
 CharLCDmp_Demo	31/10/2020 05:35 a. m.	Carpeta de archivos	
 CharLCDmp_Demo3	01/11/2020 12:26 p. m.	Carpeta de archivos	
 Digital_P	Fecha de creación: 01/11/2020 12:26 p. m.	de archivos	
 i2c_prue	Tamaño: 13.4 MB	de archivos	
 LCD_I2C	Carpetas: CharLCDmp_Demo.cydsn, CharLCDmpLib.cylib	de archivos	
 lcd_prueba	Archivos: CharLCDmp_Demo3.cywrk, CharLCDmp_Demo3.cywrk.meh		
 Im35	01/11/2020 02:11 a. m.	Carpeta de archivos	
 prueba_Im35	31/10/2020 05:31 a. m.	Carpeta de archivos	
 Workspace01	01/11/2020 05:28 a. m.	Carpeta de archivos	
	29/10/2020 09:11 a. m.	Carpeta de archivos	

Nombre	Fecha de modificación	Tipo	Tamaño
 CharLCDmp_Demo.cydsn	01/11/2020 12:26 p. m.	Carpeta de archivos	
 CharLCDmpLib.cylib	01/11/2020 12:26 p. m.	Carpeta de archivos	
	Fecha de creación: 01/11/2020 12:26 p. m.		
	Tamaño: 1.32 MB		
	Carpetas: CharLCDmp_v1_00, CharLCDmp_v1_1, External_LCD_v1_00		
	Archivos: CharLCDmpLib.cyprj, CharLCDmpLib.cyprj.meh		

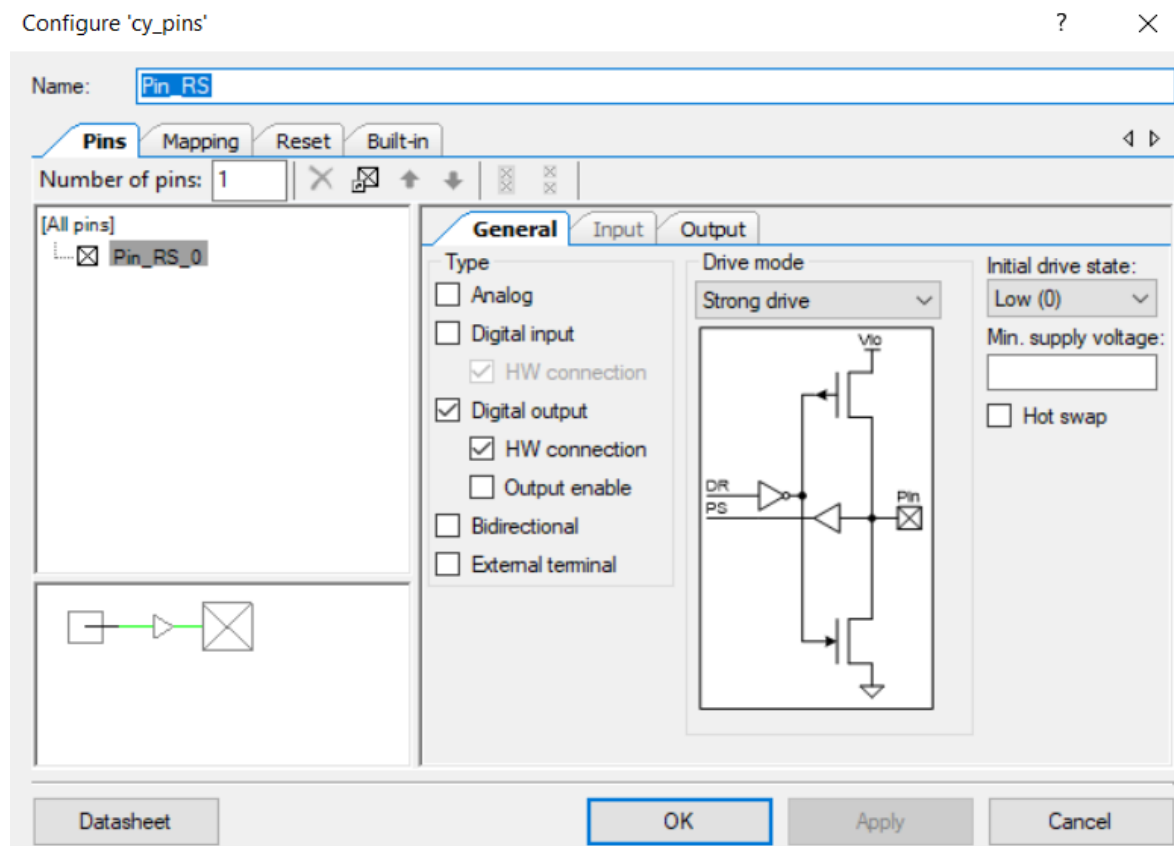
Nombre	Fecha de modificación	Tipo	Tamaño
 CharLCDmp_v1_00	01/11/2020 12:26 p. m.	Carpeta de archivos	
 CharLCDmp_v1_1	01/11/2020 12:26 p. m.	Carpeta de archivos	
 External_LCD_v1_00	01/11/2020 12:26 p. m.	Carpeta de archivos	
 CharLCDmpLib.cyprj	20/03/2013 08:56 p. m.	PSoC Creator Proj...	29
	Tipo: PSoC Creator Project		
	Tamaño: 28.7 KB		
	Fecha de modificación: 20/03/2013 08:56 p. m.		



4) Conexions pins LCD



All lcd pines lcd are configured as outputs



5) configure I2C [0] peripheral

Configure 'I2C'

Name: I2C

General Advanced Built-in

Mode: Master

Data rate (kbps): 100 Actual data rate: 100 kbps

Slave address: 8 (use '0x' for hex)

☐ Enable wakeup from Sleep Mode

Implementation: ☒ Fixed function ☐ UDB

Address decode: ☒ Hardware ☐ Software

Pins: ☒ Any ☐ I2C0 ☐ I2C1

UDB clock source: ☒ External clock ☐ Internal clock

Tolerance: - 25% + 5%

☐ Enable UDB slave fixed placement

Datasheet OK Apply Cancel

Configure 'cy_pins'

Name: SDA

Pins Mapping Reset Built-in

Number of pins: 1

[All pins]
SDA_0

General Input Output

Type: ☐ Analog ☐ Digital input ☒ Digital output ☒ Bidirectional ☐ External terminal

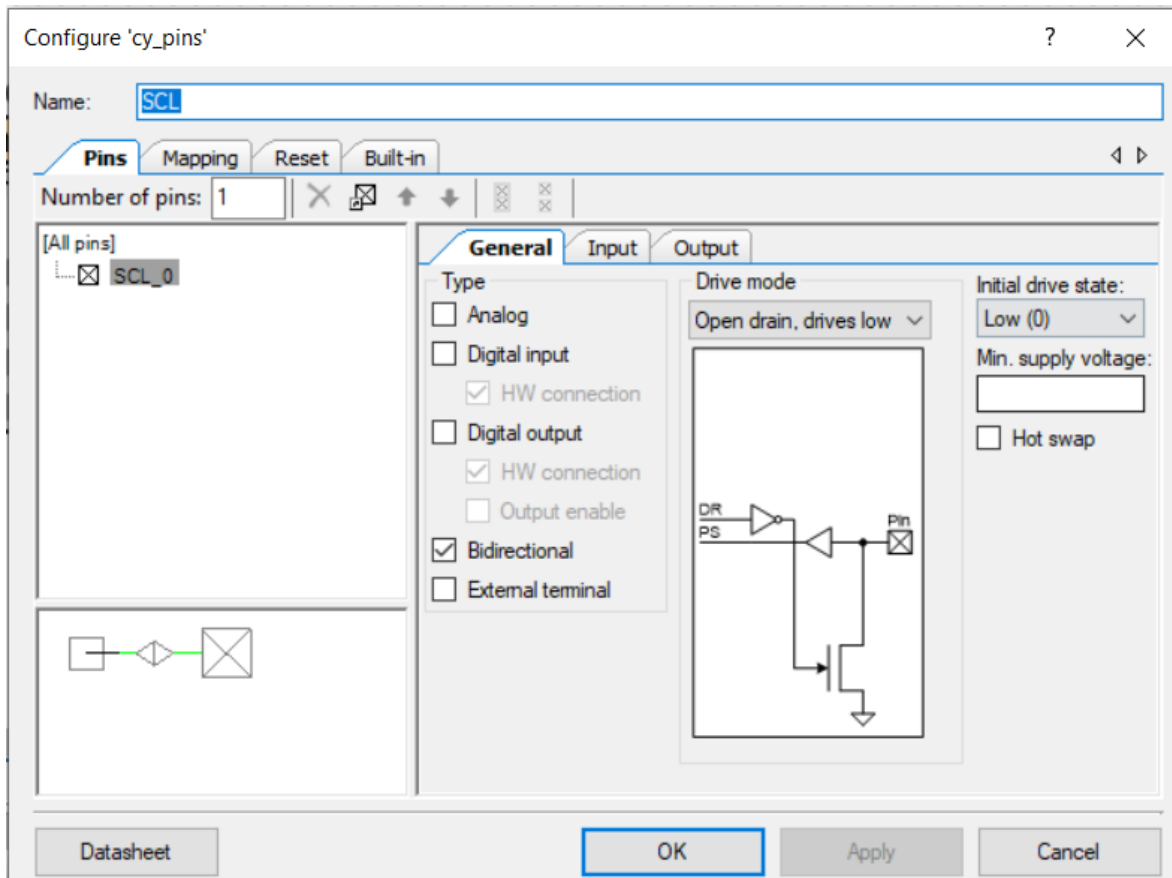
Drive mode: Open drain, drives low

Initial drive state: Low (0)

Min. supply voltage:

☐ Hot swap

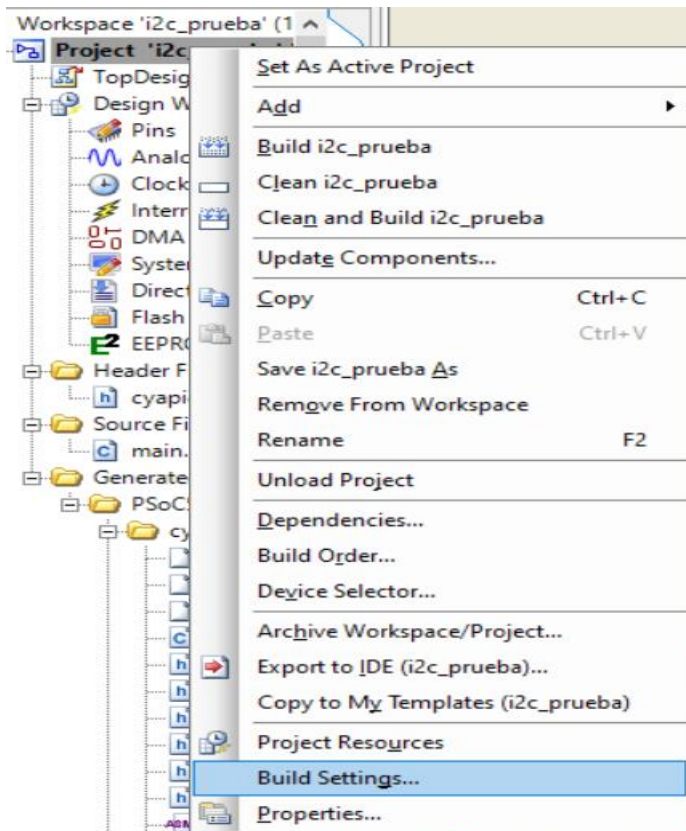
Datasheet OK Apply Cancel



6) Assign the pins

	Name	/	Port	Pin	Lock
<input checked="" type="checkbox"/>	Pin_DB4		P3[4]	33	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_DB5		P3[5]	34	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_DB6		P3[6]	36	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_DB7		P3[7]	37	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_Dec		P12[3]	47	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_EN		P3[3]	32	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_Inc		P12[2]	46	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_RS		P3[1]	30	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Pin_RW		P3[2]	31	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	SCL		P12[4]	3	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	SDA		P12[5]	4	<input checked="" type="checkbox"/>

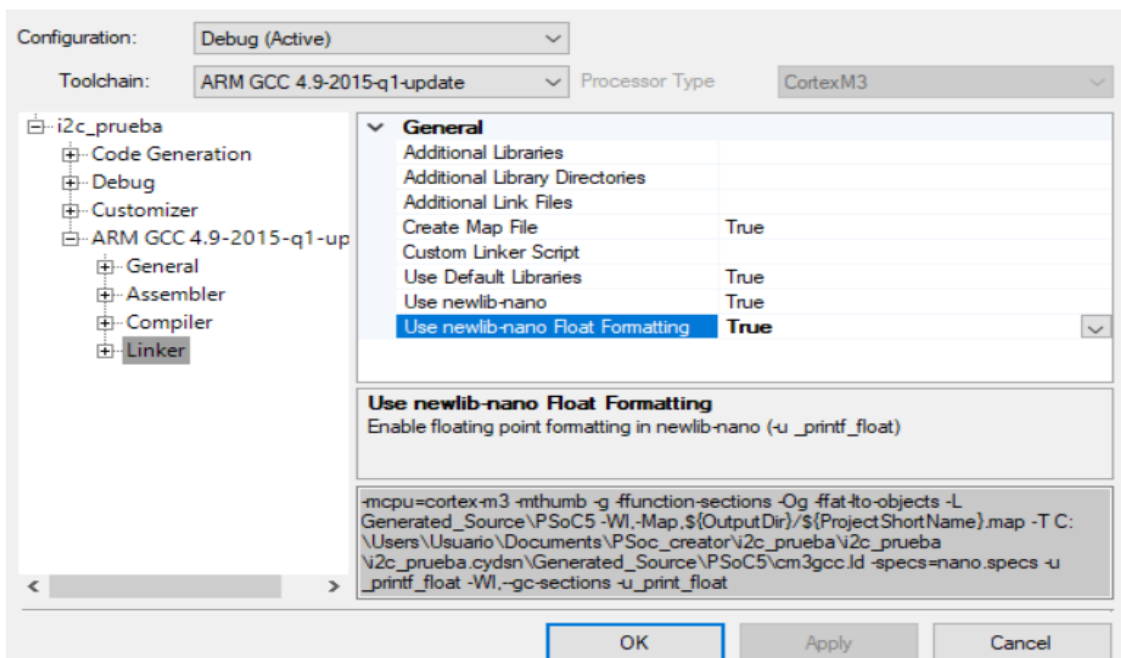
7) Fixe sprintf function



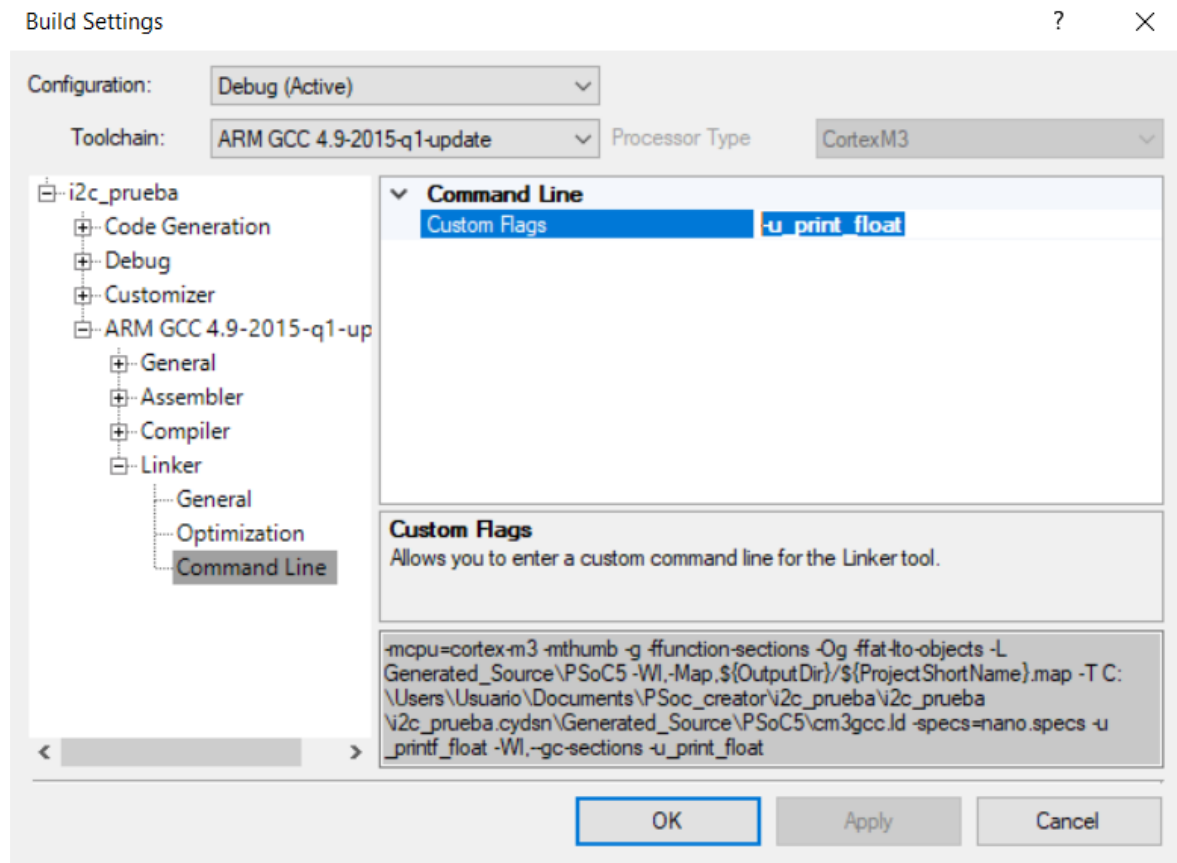
Change False to True

Build Settings

? X

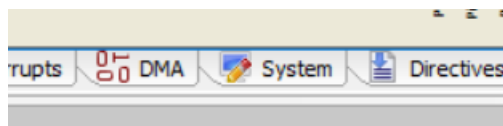


Write “-u_print_float”

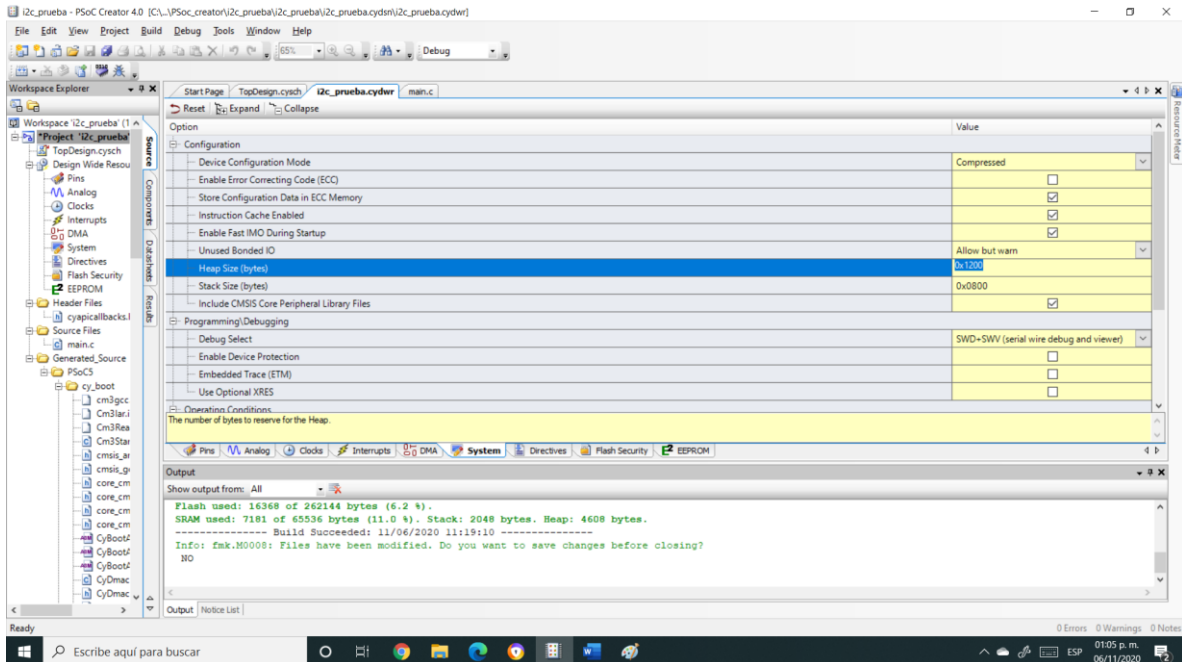


Apply and OK

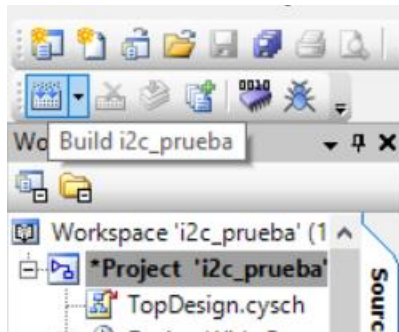
Go to system



Change 0x80 to 0x1200 inside heap size bytes



8) build before writing the code so that the necessary files are added to the project



9) Write the code in the main.c after that check the code and if the code is right then build again and program

```

/*****
*****
***  AUTHOR: JM PALOMINO          ***
***  VERSION: PSOC CREATOR 4.0.0  ***
***  TITLE: RADIO FM TEA5767     ***
*****
*****/

#include "project.h"
#include <stdio.h>

#define TEA5767_ADDR 0x60 //address

float FM=105.30; //put your favorite radio station here
short int std0=1, std1=1, rd0, rd1;

void Frequency_printf(float Frec);
void Frequency_Write(float Freq);

int main(void)
{
    CyGlobalIntEnable; /* Enable global interrupts. */

    /* Place your initialization/startup code here (e.g. MyInst_Start())
    */
    I2C_Start();
    LCD_Start();
    Pin_RW_Write(0);
    LCD_Position(0,4);
    LCD_PrintString("RADIO_FM");
    CyDelay(100);
    Frequency_Write(FM);
    Frequency_printf(FM);

    for(;;)
    {
        /* Place your application code here. */
        rd0=Pin_Inc_Read();
        rd1=Pin_Dec_Read();

        if(rd0==0) {
            CyDelay(10);
            if(rd0==0) std0=0, CyDelay(10);
        }
        if((rd0==1)&&(std0==0)){
            FM=FM+0.10;
            if(FM>108.00) FM=88.00;
            Frequency_Write(FM);
            Frequency_printf(FM);
            std0=1;
        }
    }
}
```

```

    }

    if(rd1==0) {
        CyDelay(10);
        if(rd1==0) std1=0, CyDelay(10);
    }
    if((rd1==1)&&(std1==0)){
        FM=FM-0.10;
        if(FM<88.00)FM=108.00;
        Frequency_Write(FM);
        Frequency_printf(FM);
        std1=1;
    }
}
}

void Frequency_printf(float Frec){

char strg[6];
sprintf(strg,"%1f",Frec);
LCD_Position(1,4);
LCD_PrintString(strg);
LCD_PrintString(" MHz ");
}

void Frequency_Write(float Freq){
unsigned int Freq_FM = 4 * (Freq * 1000000 + 225000) / 32768;
uint8_t data_arr[5];
    data_arr[0] = Freq_FM >> 8;
    data_arr[1] = Freq_FM & 0xFF;
    data_arr[2] = 0xB0;
    data_arr[3] = 0x10;
    data_arr[4] = 0x00;
    I2C_MasterSendStart(TEA5767_ADDR, 0);
    I2C_MasterWriteByte(data_arr[0]);
    I2C_MasterWriteByte(data_arr[1]);
    I2C_MasterWriteByte(data_arr[2]);
    I2C_MasterWriteByte(data_arr[3]);
    I2C_MasterWriteByte(data_arr[4]);
    I2C_MasterSendStop();
    CyDelay(10);
return;
}

/* [] END OF FILE */ //more information in the datasheet(TEA5767)

```